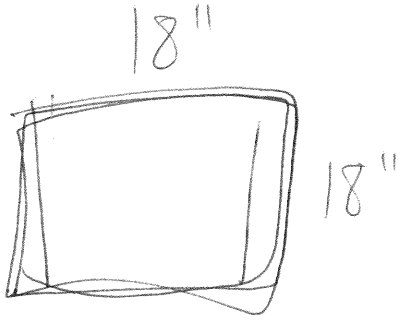
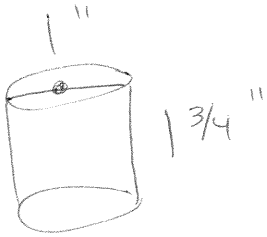
Group Report: includes sketches of prototypes, log of progress from collaboration meetings, why they chose cooking point in cooker, data of temperatures at cooking points, where conics are used in real life
4-Everything is presented organized and neat. All math reasoning is backed up and explained. Few if any grammatical errors.

Solar cooker
4- dimensions are 18" by 18" or less, can cook 5 marshmallows, cooked means they get hot and somewhat mushy.
3- dimensions are 18" by 18", cooks 3-4 marshmallows/doesn't fit in box but cooks 5 marshmallows
2- doesn't fit the dimension criteria, cooks 3-4 marshmallows
1-cooks less than 3 marshmallows in a class period, but construction of cooker is somewhat conical

Prototype/Final Design:
4- hand sketches of prototypes with dimensions and important information labeled, picture of final design with an overlay of graph, equation of conic matches final design(show work)
3- hand sketches of prototypes with dimensions, picture of final design with an overlay of graph, equation of conic matches final design(show work)
2- hand sketches of prototypes with dimensions, picture of final design with an overlay of graph, equation of conic is attempted and/or wrong(show work)
1- hand sketches of prototypes without dimensions, picture of final design with an overlay of graph, equation of conic is wrong(no work shown)

Progress log:
4- Detailed descriptions on what each person did for the day in complete sentences, organized graphically.
3- Descriptions on what each person did for the day in complete sentences, organized graphically.
2- Descriptions on what each person did for the day, organized graphically.
1- Poor descriptions and not organized.





Things we will [redacted] supply

include shopping list

- aluminum foil
- cardboard
- poster board
- bamboo ~~sticks~~ skewers
- metal skewers
- glue
- tape
- food elements

Shop Tuesday 11/13/12

Day 1 Conics WS Name _____ per _____

Solve the equations by finding the square roots. These just need to be factored to solve.

1. $x^2 + 8x + 16 = 9$

2. $x^2 - 6x + 9 = 25$

3. $x^2 - 12x + 36 = 49$

4. $2x^2 - 12x + 18 = 32$

5. $4x^2 - 4x + 1 = 36$

6. $5x^2 - 20x + 20 = 35$

7. $x^2 - \frac{2}{3}x + \frac{1}{9} = 1$

8. $x^2 + \frac{3}{2}x + \frac{9}{16} = 3$

9. $9x^2 + 12x + 4 = 5$

Find the value of c that makes the expression a perfect square trinomial. Then write the expression as a square of a binomial.

10. $x^2 + 8x + c$

11. $x^2 - 22x + c$

12. $x^2 + 16x + c$

13. $x^2 + 3x + c$

14. $x^2 - 9x + c$

15. $9x^2 - 12x + c$

Solve the equation by completing the square.

16. $x^2 + 4x = 1$

17. $x^2 - 10x = -10$

18. $6x^2 - 12x - 18 = 0$

19. $x^2 + 6x + 10 = 0$

20. $x^2 + 8x + 4 = 0$

21. $3x^2 + 36x = -42$

22. $x^2 - 24x + 81 = 0$

23. $4x^2 + 20x + 25 = 0$

24. $3x^2 - 3x + 9 = 0$

Day 1 Conics WS

Name Keys Pre-Calculus per _____

Solve the equations by finding the square roots. These just need to be factored to solve.

1. $x^2 + 8x + 16 = 9$

$(x+4)^2 = 9$

$x = -1, -7$

2. $x^2 - 6x + 9 = 25$

$(x-3)^2 = 25$

$x = 8, -2$

3. $x^2 - 12x + 36 = 49$

$(x-6)^2 = 49$

$x = 13, -1$

4. $2x^2 - 12x + 18 = 32$

$x^2 - 6x + 9 = 16$

$(x-3)^2 = 16$

$x = 7, -1$

5. $4x^2 - 4x + 1 = 36$

$(2x-1)^2 = 36$

$x = \frac{7}{2}, -\frac{5}{2}$

6. $5x^2 - 20x + 20 = 35$

$x^2 - 4x + 4 = 7$

$(x-2)^2 = 7$

$x = 2 \pm \sqrt{7}$

7. $x^2 - \frac{2}{3}x + \frac{1}{9} = 1$

$(x - \frac{1}{3})^2 = 1$

$x = \frac{4}{3}, -\frac{2}{3}$

8. $x^2 + \frac{3}{2}x + \frac{9}{16} = 3$

$(x + \frac{3}{4})^2 = 3$

$x = -\frac{3}{4} \pm \sqrt{3}$

9. $9x^2 + 12x + 4 = 5$

$(3x+2)^2 = 5$

$x = \frac{-2 \pm \sqrt{5}}{3}$

Find the value of c that makes the expression a perfect square trinomial. Then write the expression as a square of a binomial.

10. $x^2 + 8x + c$ $c = 16$

$(x+4)^2$

11. $x^2 - 22x + c$ $c = 121$

$(x-11)^2$

12. $x^2 + 16x + c$ $c = 64$

$(x+8)^2$

13. $x^2 + 3x + c$ $c = \frac{9}{4}$

$(x + \frac{3}{2})^2$

14. $x^2 - 9x + c$ $c = \frac{81}{4}$

$(x - \frac{9}{2})^2$

15. $9x^2 - 12x + c$ $c = 4$

$(3x-2)^2$

$9(x - \frac{2}{3})^2$

Solve the equation by completing the square.

16. $x^2 + 4x = 1$

$x^2 + 4x + 4 = 5$

$(x+2)^2 = 5$

$x = -2 \pm \sqrt{5}$

17. $x^2 - 10x = -10$

$x^2 - 10x + 25 = 15$

$(x-5)^2 = 15$

$x = 5 \pm \sqrt{15}$

18. $6x^2 - 12x - 18 = 0$

$x^2 - 2x + 1 = 4$

$(x-1)^2 = 4$

$x = 3, -1$

19. $x^2 + 6x + 10 = 0$

$x^2 + 6x + 9 = -1$

$(x+3)^2 = -1$

$x = -3 \pm i$

20. $x^2 + 8x + 4 = 0$

$x^2 + 8x + 16 = 12$

$(x+4)^2 = 12$

$x = -4 \pm 2\sqrt{3}$

21. $3x^2 + 36x = -42$

$x^2 + 12x + 36 = -14 + 36$

$(x+6)^2 = 22$

$x = -6 \pm \sqrt{22}$

22. $x^2 - 24x + 81 = 0$

$x^2 - 24x + 144 = -81 + 144$

$(x-12)^2 = 63$

$x = 12 \pm 3\sqrt{7}$

23. $4x^2 + 20x + 25 = 0$

$4(x^2 + 5x + \frac{25}{4}) = -25 + 25$

$(x + \frac{5}{2})^2 = 0$

$x = -\frac{5}{2}$

24. $3x^2 - 3x + 9 = 0$

$x^2 - x + \frac{1}{4} = -3 + \frac{1}{4}$

$(x - \frac{1}{2})^2 = -\frac{11}{4}$

$x = \frac{1}{2} \pm \frac{\sqrt{11}}{2}i$

Parabola Worksheet Name Niezwaag per _____ date_____

For 1-8, Find the equation of the parabola described. Find that two points that define the latus rectum points.

1. Focus: (4, 0); vertex (0,0)

$y^2 = 16x$

$(4,8)(4,-8)$

2. Focus: (0,-3); vertex (0,0)

$x^2 = -12y$

$(-6,-3)(6,-3)$

3. Focus: (-2, 0); directrix: x=2

$y^2 = -8x$

$(-2,4)(-2,-4)$

4. directrix: $y = -\frac{1}{2}$; vertiex (0,0)

$x^2 = 2y$

$(-1,\frac{1}{2})(1,\frac{1}{2})$

5. vertex: (2,-3); focus: (2,-5)

$(x-2)^2 = -8(y+3)$

$(-2,-5)(6,-5)$

6. vertex: (0,0); axis of symmetry: y-axis passing through the point (2,3)

$x^2 = \frac{4}{3}y$

$(-\frac{2}{3},\frac{1}{3})(\frac{2}{3},\frac{1}{3})$

7. focus: (-3,4); directrix: y=2

$(x+3)^2 = 4(y-3)$

$(-5,4)(-1,4)$

8. focus: (-3,-2); directrix: x=1

$(y+2)^2 = -8(x+1)$

$(-3,2)(-3,-6)$

For 9-16, Find the vertex, focus, directix and latus rectum points for each parabola.

9. $x^2 = 4y$

V (0,0)
F (0,1)
D $y = -1$
LR (-2,1)(2,1)

10. $(y-2)^2 = 8(x+1)$

V (-1,2)
F (1,2)
D $x = -3$
LR (1,6)(1,-2)

11. $(x-3)^2 = -(y+1)$

V (3,-1)
F (3,-5/4)
D $y = -3/4$
LR ~

12. $(y+3)^2 = 8(x-2)$

V (2,-3)
F (4,-3)
D $x = 0$
LR (4,1)(4,-7)

13. $y^2 - 4y + 4x + 4 = 0$

V (0,2)
F (-1,2)
D $x = 1$
LR (-1,4)(-1,0)

14. $x^2 + 8x = 4y - 8$

V (-4,-2)
F (-4,-1)
D $y = -3$
LR (-6,-1)(-2,-1)

15. $y^2 + 2y - x = 0$

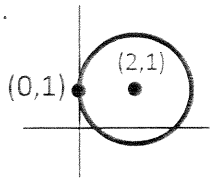
V (-1,-1)
F (-3/4,-1)
D $x = -5/4$
LR ~

16. $x^2 - 4x = y + 4$

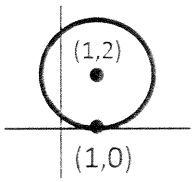
V (2,-8)
F (2,-31/4)
D $y = -33/4$
LR ~

Circles WS Name Key Per _____

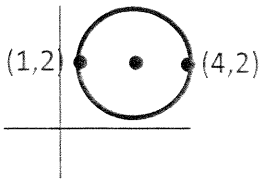
1-4 Find the center and radius of each circle. Write the standard form of each equation.

1. 

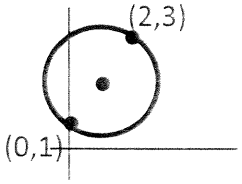
$(x-2)^2+(y-1)^2=4$

2. 

$(x-1)^2+(y-2)^2=4$

3. 

$(x-\frac{5}{2})^2+(y-2)^2=\frac{9}{4}$

4. 

$(x-1)^2+(y-2)^2=2$

5-7 Write the standard form of the equation and the general from of the equation of each circle of radius r and center (h,k). Also graph each circle on a piece of graph paper.

5. r=1; (h,k)=(1,-1)

$(x-1)^2+(y+1)^2=1$

$x^2+y^2-2x+2y+1=0$

6. r=2; (h,k)=(0,2)

$(x)^2+(y-2)^2=4$

$x^2+y^2-4y=0$

7. r=5; (h,k)=(4,-3)

$(x-4)^2+(y+3)^2=25$

$x^2+y^2-8x+6y=0$

8-13 Determine if the conic is a parabola or a circle. Put the equation into standard form. Find the following for each conic; parabola: vertex, focus, directrix, and LR points, circle: center, radius.

8. $x^2-4x-2y=0$

V: $(2,-2)$

f: $(2,-1\frac{1}{2})$

LR: $(3,-1\frac{1}{2})(1,-1\frac{1}{2})$

d: $y=-2\frac{1}{2}$

9. $x^2+6x-4y+1=0$

V: $(-3,-3)$

f: $(-3,-1)$

LR: $(-5,-1)(-1,-1)$

d: $y=-3$

10. $2x^2+2y^2+8x+7=0$

C: $(-2,0)$

r: $\sqrt{\frac{1}{2}}=\frac{\sqrt{2}}{2}$

11. $x^2+y^2+x+y-\frac{1}{2}=0$

$C=(-\frac{1}{2},-\frac{1}{2})$

$r=1$

12. $x^2+y^2-6x+2y+9=0$

$C=(3,-1)$

$r=1$

13. $x^2+8x-4y+8=0$

V: $(-4,-2)$

f: $(-4,-1)$

LR: $(-6,-1)(-2,-1)$

d: $y=-3$

Circles WS Name _____ Per _____

1-4 Find the center and radius of each circle. Write the standard form of each equation.

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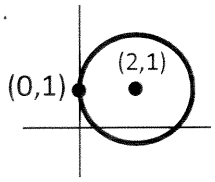

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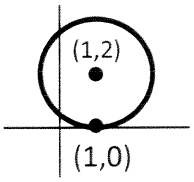

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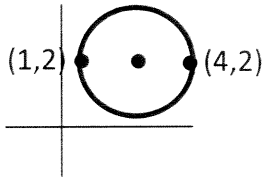

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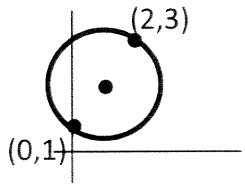


5-7 Write the standard form of the equation and the general from of the equation of each circle of radius r and center (h,k). Also graph each circle on a piece of graph paper.

5. r=1; (h,k)=(1,-1)

6. r=2; (h,k)=(0,2)

7. r=5; (h,k)=(4,-3)

8-13 Determine if the conic is a parabola or a circle. Put the equation into standard form. Find the following for each conic; parabola: vertex, focus, directrix, and LR points, circle: center, radius.

8. $x^2 - 4x - 2y = 0$

9. $x^2 + 6x - 4y + 1 = 0$

10. $2x^2 + 2y^2 + 8x + 7 = 0$

11. $x^2 + y^2 + x + y - \frac{1}{2} = 0$

12. $x^2 + y^2 - 6x + 2y + 9 = 0$

13. $x^2 + 8x - 4y + 8 = 0$

Ellipses WS Name Niezwaag Per ____ Date ____

1-4, Find the equation of the ellipse with the given information.

1. Vertices: (-7,-3), (13, -3)
   Foci: (-5, -3), (11, -3)

center (3, -3) a=10 b^2=36 c=8

$64 = 100 - b^2$

$$\frac{(x-3)^2}{100} + \frac{(y+3)^2}{36} = 1$$

2. Vertices: (4,3), (4,-9)
   length of minor axis is 8

center (4, -3) a=6 b=4 c^2=20

$c^2 = 36 - 16$

$$\frac{(x-4)^2}{16} + \frac{(y+3)^2}{36} = 1$$

3. Major axis: (-13, 2) to (1,2)
   Minor axis: (-6,4) to (-6, 0)

center (-6, 2) a=7 b=2 c^2=45

$c^2 = 49 - 4$

$$\frac{(x+6)^2}{49} + \frac{(y-2)^2}{4} = 1$$

4. co-vertices: (-13, 7), (-3, 7)
   length of major axis is 16

center (-8, 7) a=8 b=5 c^2=39

$c^2 = 64 - 25$

$$\frac{(x+8)^2}{25} + \frac{(y-7)^2}{64} = 1$$

5-8, Determine if the conic is a parabola, circle or an ellipse. Put the equation into standard form. Find the following for each conic; parabola: vertex, focus, directrix, and LR points, circle: center, radius and ellipse: center, foci, vertices, and co-vertices .

5. $x^2 + y^2 + 6x - 4y - 3 = 0$

x^2+6x $y^2-4y = 3$
$+9$ $+4$ $+9$ $+4$

$(x+3)^2 + (y-2)^2 = 16$

circle

$(x+3)^2 + (y-2)^2 = 16$

center (-3, 2)

radius = 4

6. $4x^2 + 8y^2 - 8x + 48y + 44 = 0$

$4(x^2-2x) + 8(y^2+6y)$
$+1$ $+9$

$= -44 + 4 + 72$
$= 32$

$c = 2$

ellipse

$$\frac{(x-1)^2}{8} + \frac{(y+3)^2}{4} = 1$$

center (1, -3)

vertices $(1 \pm \sqrt{8}, -3)$

co-vertices (1, -1)(1, -5)

foci (3, -3)(-1, -3)

7. $y^2 - 12x + 18y + 153 = 0$

$y^2+18y = 12x - 153$
$+81$ $+81$

parabola

$(y+9)^2 = 12(x-6)$

vertex (6, -9)

focus (9, -9)

directrix $x = 3$

LR points $(9, -3)(9, -15)$

8. $5x^2 + 2y^2 + 30x - 16y + 27 = 0$

$5(x^2+6x) + 2(y^2-8y)$
$+9$ $+16$

$= -27 + 45 + 32$
$= 50$

ellipse

$$\frac{(x+3)^2}{10} + \frac{(y-4)^2}{25} = 1$$

~~vertex~~ center (-3, 4)

focus $(-3, 4 \pm \sqrt{15})$

~~directrix~~ vertices (-3, 9)(-3, -1)

~~LR points~~ co-vertices $(-3 \pm \sqrt{10}, 4)$

Parabolas-Ellipses Review WS Name Niezwiag Per ____ Date ____

1-4, Find the equation of the given conic with the given information.

1. Ellipse ⟷ $h=5$ $a=2$
Vertices: (7,-3), (3, -3) $k=-3$ $b^2=3$
Foci: (6, -3), (4, -3) $c=1$

$$\frac{(x-5)^2}{4}+\frac{(y+3)^2}{3}=1$$

2. Circle $h=3$ $k=7$ $d^2=136$
Endpoints of the diameter: (-2, 4) and (8, 10)

$$(x-3)^2+(y-7)^2=34$$

3. Parabola ↕ $h=2$ $a=4$
vertex: (2, -3) $k=-3$
Focus: (2,1)

$$(x-2)^2=16(y+3)$$

4. Parabola ⟷ $h=-1$ $k=5$ $a=-2$
Focus: (-3, 5)
Directrix: x = 1

$$(y-5)^2=-8(x+1)$$

5-8, Determine if the conic is a parabola, circle or an ellipse. Put the equation into standard form. Find the following for each conic; parabola: vertex, focus, directrix, and LR points, circle: center, radius and ellipse: center, foci, vertices, and co-vertices .

5. $4x^2 + 25y^2 + 24x - 300y + 836 = 0$

Ellipse

$4(x^2+6x+9)$
$25(y^2-12y+36)$
$=-836$
$+36$
$+900$

$$\frac{(x+3)^2}{25}+\frac{(y-6)^2}{4}=1$$

$c^2=21$

center $(-3,6)$
vertices $(2,6)(-8,6)$
foci $(-3\pm\sqrt{21},6)$
co-vertices $(-3,8)(-3,4)$

6. $4x^2 + 4y^2 - 8x + 16y - 100 = 0$

$4(x^2-2x+1)$
$4(y^2+4y+4)$
$=100$
$+4$
$+16$

Circle

$$(x-1)^2+(y+2)^2=30$$

center $(1,-2)$
radius $=\sqrt{30}$

7. $x^2 - 4x + 4y + 24 = 0$ ↕

Parabola

(x^2-4x+4)
$=-4y-20$
$+4$

$$(x-2)^2=-4(y+5)$$

vertex $(2,-5)$
focus $(2,-6)$
directrix $y=-4$
LR points $(0,-6)(4,-6)$

8. $y^2 + 12x - 6y + 33 = 0$ ⟷

(y^2-6y+9)
$=-12x-33$
$+9$

Parabola

$$(y-3)^2=-12(x+2)$$

vertex $(-2,3)$
focus $(-5,3)$
directrix $x=1$
LR points $(-5,9)(-5,-3)$

Hyperbola WS Name Niezwaag Per ____ Date ____

1-4, Find the equation of the hyperbola with the given information.

1. Conjugate axis length of 14
Foci: (-1, 9), (-1, -7)

$\frac{(y-1)^2}{15} - \frac{(x+1)^2}{49} = 1$

$c^2 = a^2 + b^2$
$64 = a^2 + 49$
$a^2 = 15$
$h = -1$
$k = 1$

2. Vertices: (7,5), (-5,5)
Foci: (11, 5), (-9, 5)

$\frac{(x-1)^2}{36} - \frac{(y-5)^2}{64} = 1$

$h = 1$
$k = 5$
$a = 6$
$c^2 = a^2 + b^2$
$100 = 36 + b^2$
$b^2 = 64$

3. Vertices: (-1, 9) to (-1,3)
Asymptotes: $y = \pm\frac{3}{7}x + \frac{45}{7}$

$h = -1$ $k = 6$
$a = 3$ $b = 7$

$\frac{(y-6)^2}{9} - \frac{(x+1)^2}{49} = 1$

4. Center: (0,-5)
Asymptotes: $y + 5 = \pm\frac{5}{3}x$
Transverse axis length of 6

$h = 0$ $k = -5$
$a = 3$ $b = 5$

$\frac{(x)^2}{9} - \frac{(y+5)^2}{25} = 1$

5-8, Determine if the conic is a parabola, circle, an ellipse or a hyperbola. Put the equation into standard form. Find the following for each conic; parabola: vertex, focus, directrix, and LR points, circle: center, radius and ellipse: center, foci, vertices, and co-vertices, hyperbola: center, foci, vertices, and asymptotes .

5. $14y + y^2 - 4x + 97 = 0$

$(y^2 + 14y + 49) = 4x - 97 + 49$

parabola
$(y+7)^2 = 4(x-12)$
vertex $(12, -7)$
focus $(13, -7)$
directrix $x = 11$
LR points $(13, -5)(13, -9)$

6. $18x - 3x^2 - 19 = -8y^2 + 32y$

$8(y^2 - 4y + 4) - 3(x^2 - 6x +$

$= 19 + 32 - 27$
$= 24$

hyperbola
$\frac{(y-2)^2}{3} - \frac{(x-3)^2}{8} = 1$
center $(3, 2)$
foci $(3, 2 \pm \sqrt{11})$
vertices $(3, 2 \pm \sqrt{3})$
asymptotes $y = \pm\frac{\sqrt{6}}{4}(x-3) + 2$

7. $x^2 - 4x = -y^2 + 12y - 31$

$(x^2 - 4x + 4) + (y^2 - 12y + 36)$

$= -31 + 36 + 4$
$= 9$

circle
$(x-2)^2 + (y-6)^2 = 9$
center $(2, 6)$
radius $= 3$

8. $14 + 4y + 2x^2 = -12x - y^2$

$2(x^2 + 6x + 9) + (y^2 + 4y + 4)$

$= -14 + 18 + 4$
$= 8$

ellipse
$\frac{(x+3)^2}{4} + \frac{(y+2)^2}{8} = 1$
center $(-3, -2)$
foci $(-3, 0)(-3, -4)$
vertices $(-3, -2 \pm 2\sqrt{2})$
co-vertices $(-1, -2)(-5, -2)$

Graphing Parabola's WS Name Niezwaag Per _____

Do all work on a different piece of paper for credit.

Graph the parabola's on graph paper, labeling all of the important information: vertex, focus, directrix and LR points.

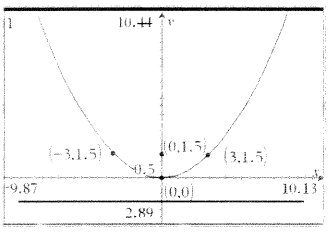
1. $x^2 = 6y$ 2. $y^2 = 8x$ 3. $(x+4)^2 = -4(y+1)$ 4. $(y-2)^2 = 2(x+3)$

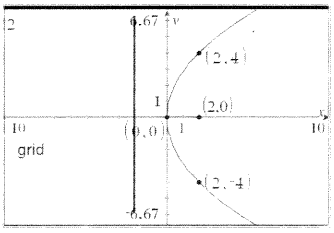
State what type of conic is given from general form and then convert it to standard form. Then identify for
Parabolas: vertex, focus, directrix and LR points
Circle: center and radius
Ellipse: center, foci, vertices, and co-vertices
Hyperbola: center, foci, vertices and asymptotes

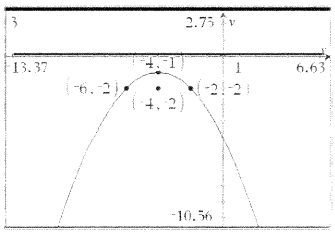
5. $3x^2 + 3y^2 - 6x+12y-15=0$ 6. $9x^2-4y^2-36x+ 8y - 4 = 0$
7. $4x^2 + y^2-32x + 16y + 124=0$ 8. $y^2-2y+4x-7=0$

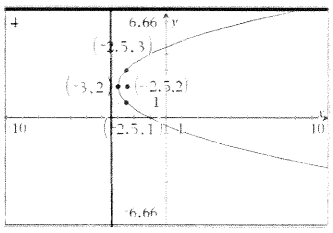
Find the standard form of each conic with the given information.

9. Ellipse: Minor axis endpoints (±12,0), major axis length 26.
10. Circle: Endpoints of the diameter are (-10, 3) and (4, -1).
11. Hyperbola: Foci (-3, -12) and (-3,0) and vertices (-3,-8) and (-3,-2).
12. Parabola: Vertex (-4,-4) and focus (-2,-4).









5. circle, $(x-1)^2+(y+2)^2=10$, $(1,-2)$, $\sqrt{10}$
6. hyperbola, $\frac{(x-2)^2}{4} - \frac{(y-1)^2}{9} = 1$, (2,1), $(2\pm\sqrt{13}, 1)$, (0,1) and (4,1), $y=\pm\frac{3}{2}(x-2)+1$
7. ellipse, $\frac{(x-4)^2}{1} + \frac{(y+8)^2}{4} = 1$, (4,-8), $(4, -8\pm\sqrt{3})$, (4,-6) and (4, -10), (3, -8) and (5, -8)
8. parabola, $(y-1)^2=-4(x-2)$, (2,1), (1,1), x=3, (1,3) and (1, -1)
9. $\frac{x^2}{144} + \frac{y^2}{169} = 1$ 10. $(x+3)^2+(y-1)^2=53$ 11. $\frac{(y+6)^2}{4} - \frac{(x+3)^2}{32} = 1$ 12. $(y+4)^2=8(x+4)$

or

20

Graphing Circles WS Name _____ Per _____

Do all work on a different piece of paper for credit.

Graph the circles on graph paper, labeling all of the important information.

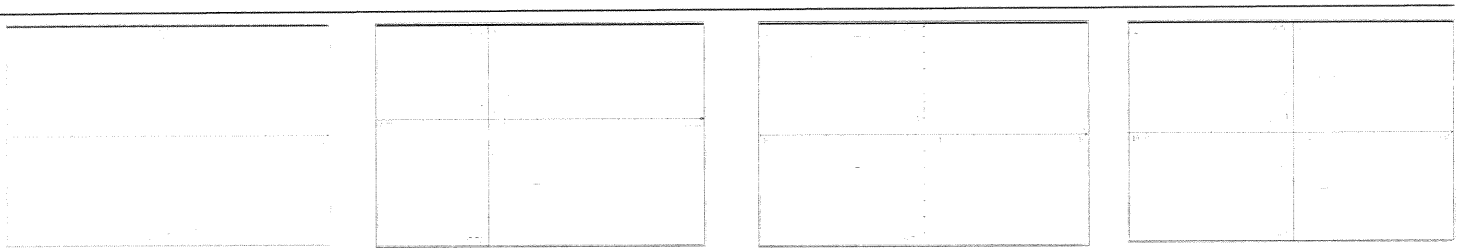
1. $x^2 + y^2 = 36$
2. $(x-3)^2 + (y+1)^2 = 9$
3. $(x+4)^2 + (y-2)^2 = 16$
4. $(x-2)^2 + y^2 = 12$

State what type of conic is given from general form and then convert it to standard form. Then identify for
Parabolas: vertex, focus, directirx and LR points
Circle: center and radius
Ellipse: center, foci, vertices, and co-vertices
Hyperbola: center, foci, vertices and asymptotes

5. $x^2 - 6x - y - 3 = 0$
6. $x^2 + 4x + 3y^2 - 5 = 0$
7. $12x^2 - 4y^2 - 72x - 16y + 44 = 0$
8. $2x^2 + 2y^2 - 8x + 16y - 10 = 0$

Find the standard form of each conic with the given information.

9. Ellipse: minor axis is 4, center (-3.-4) and one focus at (0,-4).
10. Circle: center (5, -3) and a point on the circle at (-7, 5).
11. Hyperbola: vertices (2±3,1) and asymptote $y=\frac{4}{3}(x-2)+1$
12. Parabola: Vertex (-3,3) and directrix y = 0



5. parabola, $(x-3)^2=y+12$, (3,-12), $(3,-11\frac{3}{4})$, $y=-12\frac{1}{4}$, $(2\frac{1}{2},-11\frac{3}{4})$ and $(3\frac{1}{2},-11\frac{3}{4})$
6. ellipse, $\frac{(x+2)^2}{9}+\frac{y^2}{3}=1$, (-2,0), $(-2\pm\sqrt{6},0)$, (1,0) and (-5, 0), $(-2,\sqrt{3})$ and $(-2,-\sqrt{3})$
7. hyperbola, $\frac{(x-3)^2}{4}-\frac{(y+)^2}{12}=1$, (3,-2), $(7,-2)$ and (-1,-2), (5,-2) and (1,-2), $y=\pm\sqrt{3}(x-3)-2$
8. circle, $(x-2)^2+(y+4)^2=25$, (2,-4), 5
9. $\frac{(x+3)^2}{13}+\frac{(y+4)^2}{4}=1$
10. $(x-5)^2+(y+3)^2=208$
11. $\frac{(x-2)^2}{9}-\frac{(y-1)^2}{16}=1$
12. $(x+3)^2=12(y-3)$

Graphing Ellipses WS Day 4 Name _____ Per _____

Do all work on a different piece of paper or credit.

Graph the Ellipses on graph paper, labeling all of the important information: center, foci, vertices, and co-vertices.

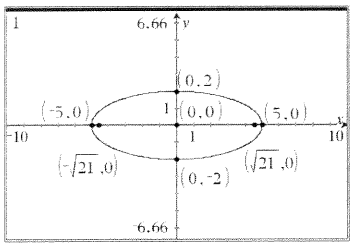
1. $\frac{x^2}{25}+\frac{y^2}{4}=1$
2. $\frac{(x-3)^2}{16}+\frac{(y+1)^2}{1}=1$
3. $\frac{(x+4)^2}{4}+\frac{(y-2)^2}{9}=1$
4. $\frac{(x-2)^2}{16}+\frac{y^2}{36}=1$

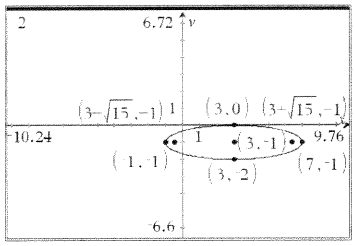
State what type of conic is given from general form and then convert it to standard form. Then identify for
Parabolas: vertex, focus, directrix and LR points
Circle: center and radius
Ellipse: center, foci, vertices, and co-vertices
Hyperbola: center, foci, vertices and asymptotes

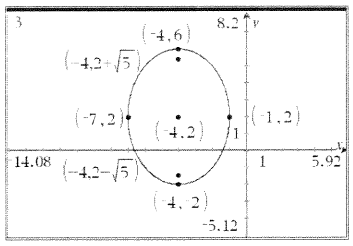
5. $4x^2+9y^2-16x+18y-11=0$
6. $2y^2-4y-x+2=0$
7. $9x^2-4y^2-18x+8y-31=0$
8. $3x^2+3y^2-12x+27y-12=0$

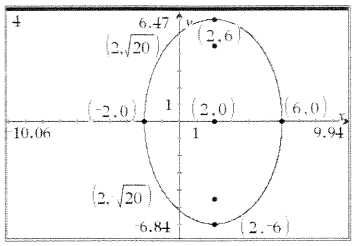
Find the standard form of each conic with the given information.

9. Ellipse: foci at (-4,2) and (-4,8), vertex (-4,10).
10. Circle: endpoints of the diameter are (-3,4) and (5, 10).
11. Hyperbola: center at (-2,-3), focus at (-4,-3) and vertex at (-3,-3).
12. Parabola: focus at (-2,0) and directrix at x=2.









5. ellipse, $\frac{(x-2)^2}{9}+\frac{(y+1)^2}{4}=1$, (2,-1), $(2\pm\sqrt{5},-1)$, (5,-1) and (-1, -1), (2,1) and (2, -3)
6. parabola, $(y-1)^2=\frac{1}{2}x$, (0,1), (1/8,1), x=-1/8, (1/8,5/4) and (1/8, 3/4)
7. hyperbola, $\frac{(x-1)^2}{4}-\frac{(y-1)^2}{9}=1$, (1,1), $(1\pm\sqrt{13},1)$, (3,1) and (-1, 1), $y=\pm\frac{3}{2}(x-1)+1$
8. circle, $(x-2)^2+(y+9/2)^2=145/4$, (2,-9/2), $\frac{\sqrt{145}}{2}$
9. $\frac{(x+4)^2}{16}+\frac{(y-5)^2}{25}=1$
10. $(x-1)^2+(y-7)^2=5$
11. $\frac{(x+2)^2}{1}-\frac{(y+3)^2}{3}=1$
12. $y^2=-8x$

Graphing Hyperbolas WS Day 10 Name _____ Per _____

Do all work on a different piece of paper for credit.

Graph the hyperbolas on graph paper, labeling all of the important information: center, foci, vertices and asymptotes.

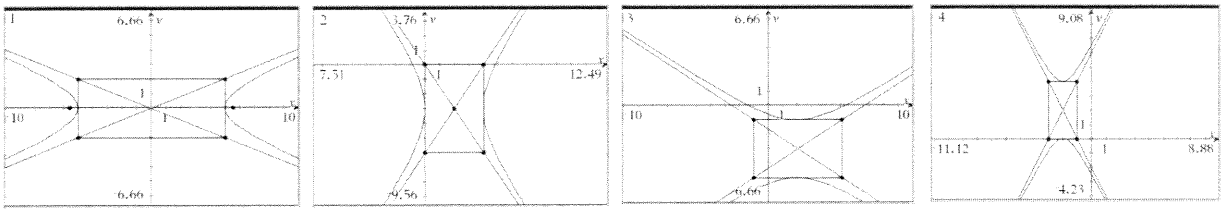
1. $\frac{x^2}{25} - \frac{y^2}{4} = 1$
2. $\frac{(x-2)^2}{4} - \frac{(y+3)^2}{9} = 1$
3. $\frac{(y+3)^2}{4} - \frac{(x-2)^2}{9} = 1$
4. $\frac{(y-2)^2}{4} - \frac{(x+2)^2}{1} = 1$

State what type of conic is given from general form and then convert it to standard form. Then identify for
Parabolas: vertex, focus, directrix and LR points
Circle: center and radius
Ellipse: center, foci, vertices, and co-vertices
Hyperbola: center, foci, vertices and asymptotes

5. $x^2-4y^2-16x-2y-19=0$
6. $2x^2-y+8x=0$
7. $4x^2+9y^2-16x-18y-11=0$
8. $4x^2+4y^2-12x+24y-12=0$

Find the standard form of each conic with the given information.

9. Ellipse: center at (-1,2), focus at (0,2), vertex (2,2).
10. Circle: endpoints of the diameter are (4,-4) and (6, -8).
11. Hyperbola: vertices at (0,1) and (6,1), asymptote at $y=-\frac{2}{3}x+9$.
12. Parabola: vertex at (2,-3) and focus at (2,-4).



5. hyperbola, $\frac{(y-1)^2}{4} - \frac{(x+2)^2}{1} = 1$, (-2,1), $(-2,1\pm\sqrt{5})$, (-2,3) and (-2, -1), $y=\pm 2(x+2)+1$
6. parabola, $(x+2)^2=\frac{1}{2}(y+8)$, (-2,-8), $(-7\frac{7}{8},-8)$, $x=-2\frac{1}{8}$, $(-7\frac{7}{8},-7\frac{3}{4})$ and $(-7\frac{7}{8},-8\frac{1}{4})$
7. ellipse, $\frac{(x-2)^2}{9} + \frac{(y-1)^2}{4} = 1$, (2,1), $(2\pm\sqrt{5},\ 1)$, (5,1) and (-1, 1), $(2,-1)$ and (2, 3)
8. circle, $(x-\frac{3}{2})^2+(y+3)^2=57/4$, $(3/2,-3)$, $\frac{\sqrt{57}}{2}$
9. $\frac{(x+1)^2}{9} + \frac{(y-2)^2}{8} = 1$
10. $(x-5)^2+(y+6)^2=5$
11. $\frac{(x-3)^2}{9} - \frac{(y-1)^2}{4} = 1$
12. $(x-2)^2=-4(y+3)$

Conics Review Day 11 Name _____ Per ___

To receive credit, do all work on a separate piece of paper.

1-9, Identify each equation and the requested information for the corresponding figure;

Circle: center and radius

Parabola: vertex, focus, directrix and LR points

Ellipse: Center, vertices, covertices, foci, minor and major axis length

Hyperbola: center, vertices, foci and asymptotes

1. $y^2 = -16x$ 2. $\frac{x^2}{25} - y^2 = 1$ 3. $\frac{y^2}{25} + \frac{x^2}{16} = 1$ 4. $x^2 + 4y = 4$

5. $y^2 - 4y - 4x^2 + 8x = 4$ 6. $4x^2 + 9y^2 - 16x - 18y = 11$ 7. $4x^2 - 16x + 16y + 32 = 0$

8. $9x^2 + 4y^2 - 18x + 8y = 23$ 9. $3x^2 + 3y^2 - 6x + 12y - 12 = 0$

10-16, Write an equation of the conic described. Graph the equation.

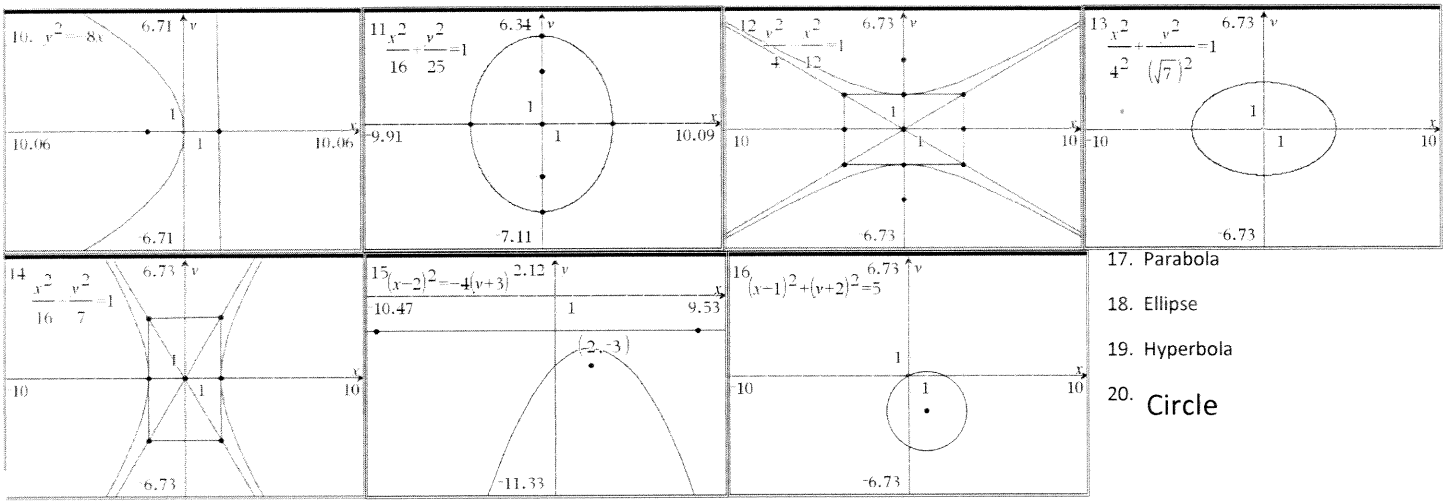
10. parabola; focus (-2, 0); directrix: x=2
11. Ellipse; center: (0,0); focus (0,3); vertex: (0,5)
12. hyperbola; center: (0,0); focus: (0,4); vertex: (0,-2)
13. ellipse; foci: (±3,0); vertex: (4,0)
14. hyperbola; vertices: (±2,0); focus: (4,0)
15. parabola; vertex: (2,-3); focus: (2,-4)
16. circle: endpoints of diameter: (2,0) and (0,-4)

17-20, Identify each conic without completing the squares.

17. $y^2 + 4x + 3y - 8 = 0$ 18. $x^2 + 2y^2 + 4x - 8y + 2 = 0$

19. $x^2 - 8y^2 - x - 2y = 0$ 20. $2x^2 + 2y^2 + 8x + 7 = 0$

Answers: 1. Parabola, v:(0,0),f:(-4,0), d: x = 4, LR: (-4,±8) 2. hyperbola, c:(0,0), v:(±5,0), f:$(\pm\sqrt{26}, 0)$, $y = \pm\frac{1}{5}x$ 3. ellipse: c:(0,0), v:(0,±5),cv:(±4,0), f: (0,±3), major:10, minor:8 4. parabola, v: (0,1), f: (0,0), d: y=2, LR: (±2,0) 5.hyperbola: c: (1,2), v: (1,4)(1,0), f: $(1,2 \pm \sqrt{5})$, y=±2(x-1)+2 6. Ellipse: c: (2,1), v: (5,1), (-1,1), cv: (2,3)(2,-1), f: $(2\pm\sqrt{5},1)$, major: 6, minor: 4 7. parabola: v: (2,-1), f: (2,-2), d: y=0, LR: (0,-2)(4,-2) 8. ellipse: c: (1,-1), v: (1,2)(1,-4), cv: (3,1)(-1,-1), f: $(1,-1\pm\sqrt{5}$, major: 6, minor: 4 9. circle: c: (1,-2), r: 3



17. Parabola
18. Ellipse
19. Hyperbola
20. Circle